WHAT IS CLAIMED IS:

1. A method of making a plasma reactor component having one or more surfaces which are exposed to plasma during use, the method comprising plasma spraying a coating material onto a plasma exposed surface of the component to form a coating having surface roughness characteristics that promote the adhesion of polymer deposits.

2. The method of claim 1, further comprising steps of;
roughening the plasma exposed surface of the component; and
cleaning the roughened surface prior to plasma spraying the coating material.

3. The method of claim 1, further comprising cleaning exposed surfaces of the plasma sprayed coating.

4. The method of claim 1, wherein the coating material is a ceramic or a polymeric material.

5. The method of claim 1, wherein the component has openings therethrough, the method further comprising plugging the openings before plasma spraying the coating.

6. The method of claim 1, further comprising removing the component from a plasma reaction chamber and cleaning the plasma exposed surface thereof by removing any existing coating and/or adhered polymer deposits therefrom prior to plasma spraying the coating onto the cleaned surface.

7. The method of claim 4, wherein the plasma sprayed coating is a ceramic material having a thickness of 2 to 5 mils.

8. The method of claim 4, wherein the component and the coating material comprise the same ceramic material.

9. The method of claim 4, wherein the coating material is a polyimide.

10. The method of claim 9, wherein the coating has a thickness of 10 to 30 mils.

11. The method of claim 1, wherein the component is selected from the group consisting of a plasma confinement ring, a focus ring, a pedestal, a chamber wall, a chamber liner and a gas distribution plate.

12. The method of claim 2, wherein the roughening step comprises bead blasting the surface of the component.

13. The method of claim 1, wherein the coating has an arithmetic mean surface roughness value (Ra) of between 150 and 190 micro-inches.

14. A component of a plasma reactor, the component having one or more surfaces exposed to the plasma during processing, the component comprising a plasma sprayed coating on a plasma exposed surface thereof, wherein the coating has surface roughness characteristics that promote the adhesion of polymer deposits.

15. The component of claim 14, wherein the component is made from a metallic material or a ceramic material.

16. The component of claim 15, wherein the component comprises aluminum having an anodized or non-anodized plasma exposed surface.

17. The component of claim 14, wherein the component is made from a ceramic material selected from the group consisting of alumina, yttria, zirconia, silicon carbide, silicon nitride, boron carbide and boron nitride.

18. The component of claim 14, wherein the component is selected from the group consisting of a plasma confinement ring, a focus ring, a pedestal, a chamber wall, a chamber liner and a gas distribution plate.

19. The component of claim 14, wherein the coating is a ceramic or polymeric material.

20. The component of claim 19, wherein the coating is a ceramic material selected from the group consisting of alumina, yttria, zirconia, silicon carbide, silicon nitride, boron carbide and boron nitride.

21. The method of claim 20, wherein the component and the coating material comprise the same ceramic material.

22. The component of claim 20, wherein the coating has a thickness of 2 to 5 mils.

23. The component of claim 19, wherein the coating is a polyimide.

24. The component of claim 23, wherein the coating has a thickness of 10 to 30 mils.

25. The component of claim 14, wherein the coating has an arithmetic mean surface roughness value (Ra) of from 150 to 190 micro-inches.

26. A plasma reactor comprising at least one component according to claim 14.

27. A method of processing a substrate in the plasma reactor of claim 26, the method comprising contacting an exposed surface of the substrate with a plasma.

28. The method of claim 27, further comprising steps of:

positioning the substrate on a substrate support in the reactor;

introducing a process gas into the reactor;

applying RF energy to the process gas to generate a plasma adjacent an exposed surface of the substrate; and

etching the exposed substrate surface with a plasma.

29. The method of claim 28, wherein the process gas comprises at least one polymer forming species.

30. The method of claim 27, wherein the exposed surface of the substrate comprises a metallic material or an oxide.

31. The method of claim 28, wherein the component is a gas distribution plate, the method further comprising introducing the process gas into the reactor through openings in the gas distribution plate.